AF/3726

ATTORNEY DOCKET NO. 051252-5065 IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	)	
	)	
William J. IMOEHL *et al*	)	Confirmation No.: 2942
	)	
Application No.: 09/559,749	)	Group Art Unit: 3726
	)	
Filed: June 30, 2000	)	Examiner: E. Compton
	)	
For: METHOD OF MANUFACTURING A FUEL INJECTOR SEAT	)	

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
Arlington, VA 22202

APPELLANTS' BRIEF TRANSMITTAL FORM

1. Transmitted herewith is an Appellants' Brief Under 37 C.F.R. § 1.192 (in triplicate), which is being submitted further to the Notice of Appeal filed 01 October 2003 and the Notice of Non-Compliance with 37 CFR 1.192(c) mailed 16 June 2004. The Brief has been revised to comply with the Examiner's comments in the Notice and is being submitted within the one-month time period to 16 July 2004 provided in the Notice.

2. Additional papers enclosed.

   ☐ _____

3. Oral Hearing Under 37 C.F.R. § 1.194

   ☐ Oral hearing is hereby requested.
   ☐ Fee under 37 C.F.R. § 1.17(d) is enclosed.

4. Extension of time

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136(a) apply.

☐ Appellants petition for an extension of time, the fees for which are set out in 37 C.F.R. § 1.17(a), for the total number of months checked below:

Total Months Requested	Fee for Extension	[Fee for Small Entity]
☐ one month	$ 110.00	$ 55.00
☐ two months	$ 420.00	$ 210.00
☐ three months	$ 950.00	$ 475.00
☐ four months	$ 1,480.00	$ 740.00

Extension of time fee due with this request: $00.00.

If an additional extension of time is required, please consider this a Petition therefor.

5. Fee Payment

☒ No fee is to be paid at this time.

☐ The Commissioner is hereby authorized to charge **0.00**.

☒ The Commissioner is hereby authorized to charge any fees including fees due under 37 CFR §§ 1.16 and 1.17 which may be required, or credit any overpayment to Deposit Account No. 50-0310.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

Dated: July 12, 2004

By: _____
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MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
Washington, D.C. 20231

Sir:

APPELLANTS' BRIEF UNDER 37 C.F.R. § 1.192

This brief is in furtherance of the Notice of Appeal, filed in the above-identified patent application on 01 October 2003. Appellants appeal the final rejection dated 01 April 2003 and the Notice of Non-Compliance with 37 CFR 1.192(c) mailed 16 June 2004. The Brief has been revised to comply with the Examiner's comments in the Notice and is being submitted within the one-month time period to 16 July 2004 provided in the Notice. The fees required under 37 C.F.R. § 1.17(f), and any required petition for extension of time for filing this brief and fees therefor, have been filed on 01 April 2004. This brief is being transmitted in triplicate.

1. THE REAL PARTY IN INTEREST

The real party in interest is Siemens VDO Automotive Corporation of Auburn Hills, Michigan.

2. RELATED APPEALS AND INTERFERENCES

Appellants are not aware of any other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the appeal.

3. STATUS OF THE CLAIMS

The status of the claims[1] is as follows:

Claims canceled:	1 and 5
Claims pending:	2-4 and 6-10
Claims allowed:	None
Claims rejected:	2-4 and 6-10
Claims on appeal:	2-4 and 6-10

4. STATUS OF AMENDMENTS

A first non-Final Office Action was issued on 09 May 2001. Appellants filed a first Amendment Under 37 C.F.R. § 1.111 on 09 August 2001 in response to the first Office Action. The first Amendment canceled claims 1 and 5, and amended claims 2, and 6-8. Concurrently, Figure 2 was revised to comply with the requirement by the Examiner to show a tool.

A first Final Office Action was issued on 19 September 2001. Appellants filed on 19 December 2001, a Request for Reconsideration in response to the first Final Office Action.

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[1] *See* the attached Appendix for the claims presented for appeal.

A first Advisory Action was issued on 07 January 2002. Appellants filed on 19 March 2002, a second Amendment Under 37 C.F.R. § 1.116 concurrently with a first Notice of Appeal. Claim 7 was again revised in the second Amendment.

A second Advisory Action was issued on 03 April 2002. Appellants filed a Request for Continued Examination on 18 April 2002.

Thereafter, a second non-Final Office Action was issued on 31 May 2002. Appellants filed a third Amendment and Request for Reconsideration on 03 September 2002 in reply to the second non-Final Office Action. The third Amendment included additional revisions to claim 7. No other amendment was filed thereafter.

A Final Office Action was issued on 01 November 2002. Appellants filed a Request for Reconsideration on 31 January 2003.

A second Final Office Action was issued on 01 April 2003. The second Final Office Action applied new grounds of rejection, and indicated that the arguments presented were not persuasive. Appellants filed a second Request for Reconsideration on 01 July 2003.

An Advisory Action was issued on 15 July 2003. Appellants filed a second Notice of Appeal on 01 October 2003.

5. SUMMARY OF THE INVENTION

Appellants' invention, in one aspect, is a method of forming a fuel injector seat that allows for the formation of a suitable sealing surface of the fuel injector seat.[2] The fuel injector seat 64, according to a preferred embodiment, can be utilized in a fuel injector, as shown in Figure 1 (reproduced at right from a counterpart PCT application). In particular, the method of the present invention provides (as shown in the annotated Figure 2 below) for a transition

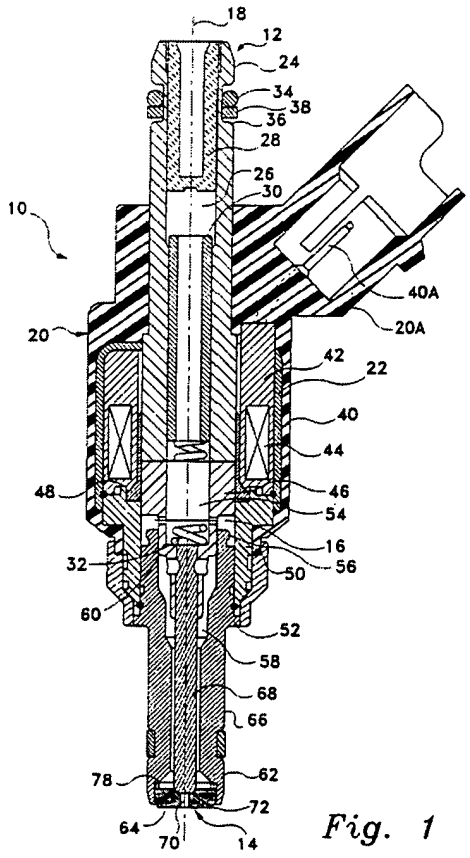

Fig. 1

[2] *See* the Originally Filed application at pages 2 and 3.

portion 614 that is located between a sealing portion 612 and an orifice portion 608, and that defines a volume to receive the tip of the grinding tool 100.[3] (*See* the Originally-Filed application at page 9, lines 10-14).

As noted in the originally-filed application, a grinding velocity (i.e., the radial velocity at any given position on the working surface of the rotating grinding tool 100) decreases as the axis of rotation is approached from the periphery of a rotating tool.[4] (*See* the Originally-Filed application at page 1, lines 25-29 and page 2, lines 1-3). Thus, as one moves along the conical working surface of the grinding tool 100 from "Edge 1" towards the apex or vertex at the axis of rotation of the tool, there is a point (e.g., "Edge 2") at which the grinding velocity becomes insufficient to achieve the desired surface characteristics of

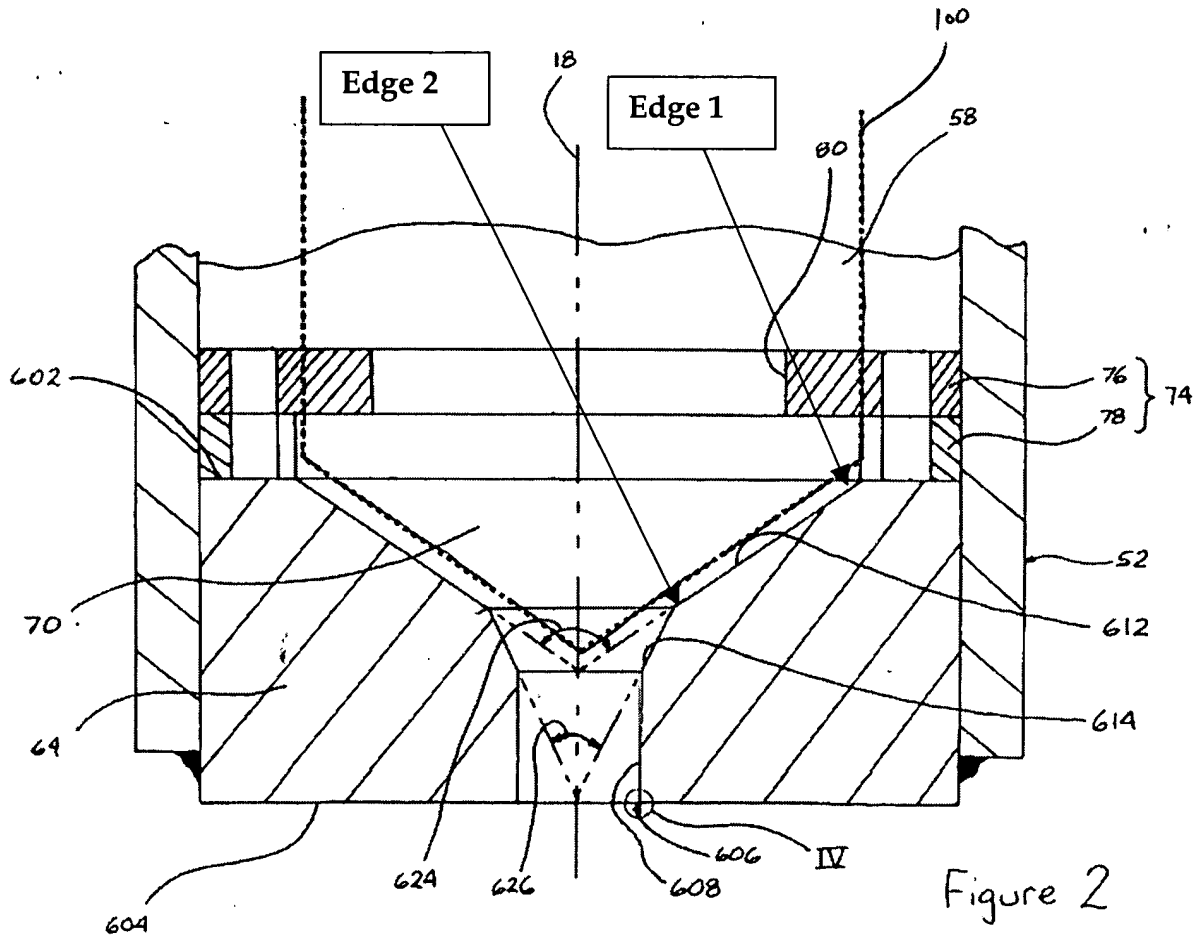

Figure 2

[3] *Id* at page 9, lines 10-14.
[4] *Id* at page 1, lines 25-29 and page 2, lines 1-3.

the sealing portion 612. (*See* the Originally-Filed application at page 2, lines 1-3). It has been discovered that the provision of the transition portion 614, with its volume about the longitudinal axis 18 to receive the tip of the grinding tool 100, allows for only that portion of the working surface of the rotating grinding tool 100 to be driven at a sufficient grinding velocity, i.e., between "Edge 1" and "Edge 2," while engaging the sealing portion 612. (*See* the Originally-Filed application at page 9, lines 10-14). Hence, the configuration of the transition portion 614—in conjunction with the claimed method steps—ensures that the working surface of the tool 100 would be driven at a sufficient minimum grinding velocity even proximate "Edge 2" (which has a lower grinding velocity as compared to "Edge 1") such that a selected finish is provided over the entire surface of the sealing portion 612.[5] (*See* the Originally-Filed application at page 9, lines 10-14). Furthermore, it has also been discovered that, where the sealing portion 614 and transition portion 612 are configured as respective cones with respective included angles 624 and 626 such that when the included angle 624 is approximately 15 degrees greater than the included angle 626, flow stability of the fuel flowing through the orifice 606 is increased.[6] (*See* the Originally-Filed application at page 9, lines 15-29). Thus, the provision of the transition portion to receive the vertex of a conical end of a tool in the transition portion—in conjunction with the claimed process —allows, at least, for a sufficient grinding velocity of the tool over the sealing portion (*See* the Originally-Filed application at page 9, lines 10-14) such that a selected surface finish on the valve seat can be achieved while also enhancing the flow stability of fuel through the valve seat (*See* the Originally-Filed application at page 9, lines 15-29).

6. ISSUE PRESENTED

Whether it would have been obvious for one of ordinary skill in the art, in a determination under 35 U.S.C. § 103, to modify a primary reference (i.e., JP 60-019957 "Yuji"), which shows and describes a known valve seat structure and grinding process

[5] *Id* at page 9, lines 10-14.
[6] *Id* at page 9, lines 15-29.

different from the claimed invention, in view of secondary references (i.e., appellants' Admitted-Prior-Art and U.S. Patent No. 3,430,338 to Gabrielli), which show or describe different methods or structures that are also different from the claimed invention as a whole, in the absence of a clear showing of a motivation, suggestion, or any objective evidence to combine the references or even to teach or suggest all of the claimed features.

7. GROUPINGS OF CLAIMS

Claims 2-4 and 6-10 stand or fall together.

8. ARGUMENTS

The Final Office Action (issued on 01 April 2003) concludes that the claimed invention as a whole, as recited in each of claims 2-4 and 6-10, is unpatentable under 35 U.S.C. § 103 over JP 60-019957 ("Yuji") in view of appellants' Admitted-Prior-Art and U.S. Patent No. 3,430,388 to Gabrielli (hereafter "the secondary references").

Appellants respectfully assert that none of the relied-upon references are appropriate to establish a *prima facie* case of obviousness of the claimed invention as a whole because: (1) there is no motivation or suggestion to combine the references, and (2) even if the references could be combined, the proposed combination of references fails to teach or suggest all of the claimed features.

I. No Suggestion, Teaching, or Reason to Combine the References And Therefore A *Prima Facie* Case of Obviousness Has Not Been Established

Claim 7, the only independent claim, recites a method of forming a fuel injector seat that, *inter alia*, can be achieved by:

> grinding with a tool that has a conical end with a vertex of the conical end disposed in the transition portion to provide a select finish on the sealing portion, the transition portion provides a volume receiving the vertex of the tool so that the vertex avoids

> contact with the sealing surface and with the transition portion, the vertex being contiguous to the axis.

The Examiner confirms, in the Final Office Action, that Yuji fails to teach or suggest the claimed invention as a whole, as recited in claim 7. The Examiner, however, concludes that it would have been obvious to one of ordinary skill in the art to modify Yuji based on the secondary references "[i]n order to grind the valve seat in one simple step using an automated machine." This conclusion, however, is not supported by objective evidence that is "clear and particular" in order to support a motivation or suggestion to combine the references.

As held by the Federal Circuit, a finding or showing of the evidence in support of an obviousness determination under 35 U.S. C. § 103 must be "clear and particular."[7] Broad conclusionary statements regarding the teaching of multiple references, standing alone, are not "evidence" to support the showing of obviousness.[8] That is, the Final Office Action fails to articulate how, on the unsupported basis of grinding in one simple step, this conclusion of obviousness was reached; especially given that the proposed combination of references fails to teach or suggest all of the claimed features, including the step of grinding with a tool having its vertex disposed in a volume defined by a transition portion of a valve seat. Consequently, appellants respectfully submit that the Final Office Action fails to meet the burden elucidated by the Federal Circuit to provide for a "clear and particular" showing of objective evidence, e.g., motivation or suggestion, to combine the references so as to render the claimed invention as a whole obvious.

Notwithstanding the lack of a clear and particular showing of objective evidence to combine Yuji in view of the secondary references, appellants further submit that one of ordinary skill in the art would not have utilized the teaching of the Admitted-Prior-Art or Gabrielli due to differences in the structures of Yuji, the Admitted-Prior-Art, and Gabrielli. For example, the fuel injector seat of Yuji has a coupling surface 15 whereas the nozzle of Gabrielli fails to show or describe a similar coupling surface interposed between a conical

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[7] *See In re Dembiczak*, 175 F3d 994, 999, USPQ2d 1614, 1617 (Fed. Cir. 1999).

surface and a cylindrical surface of Gabrielli. Furthermore, the grinding tool of the Admitted-Prior-Art is described as a conical grinding tool whereas the grinding pin 23 of Gabrielli is shown as a cylindrical grinding tool.

Because the structures of the various references are configured differently with respect to each other, there is no suggestion in the references to combine these disparate elements that are available in these references, or any indication in these references of any basis for picking the particular elements in an attempt to render the claimed invention as a whole obvious.[9] In the absence of any objective evidence to explain why one of ordinary skill would combine the references, and in view of the differences between these references, appellants respectfully assert that Yuji, the Admitted-Prior-Art, and Gabrielli fail to teach or suggest the claimed invention as a whole. Accordingly, claims 2-4 and 6-10 are patentable over Yuji, the Admitted-Prior-Art, and Gabrielli for at least this reason.

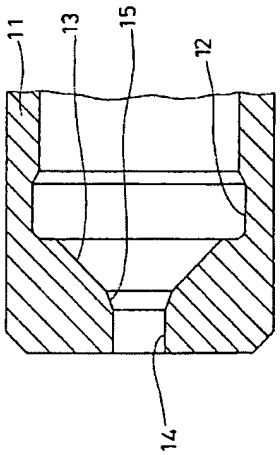


Fig. 2 of Yuji

II. All of the Claimed Features Are Not Taught or Suggested And Therefore A *Prima Facie* Case of Obviousness Has Not Been Established

Yuji shows and describes, in Figure 2 (reproduced right), a conical surface 13 with coupling surface 15. Yuji fails to show or describe a conical tool, as acknowledged by the Examiner, or even a conical tool whose vertex is disposed in the coupling surface 15 during the step of grinding the sealing portion. As noted in appellants' own application at page 1, line 25, it is known to provide for a conical tool

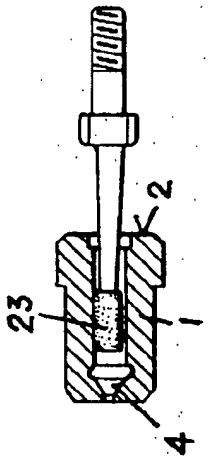
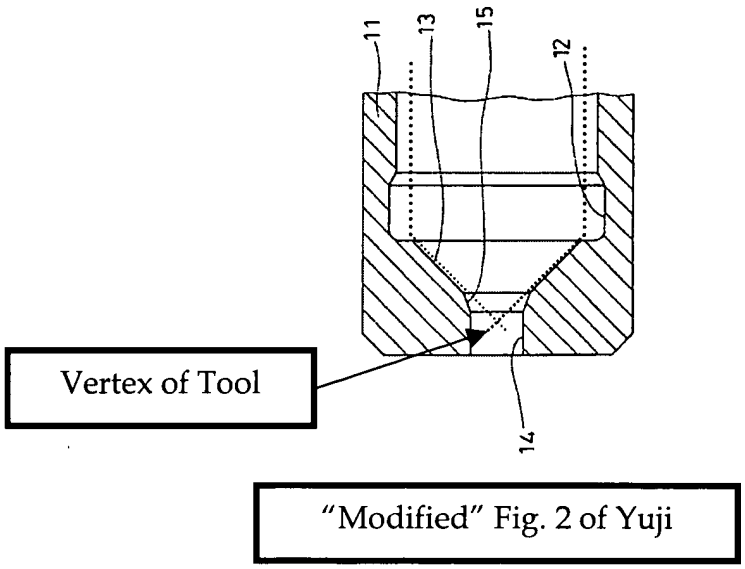


Fig. 3 of Gabrielli

[8] *Id.*

[9] It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. *In re Wesslau*, 353 F2d 238, 241, 147 USPQ 391, 393 (CCPA 1965); *See also In re Mercer*, 515 F2d 1161, 1165-66, 185 USPQ 774, 778 (CCPA 1975).

(Fig. 3, reproduced below at right), to grind fuel nozzles with a grinding tool 23. But none of the references show or describe a conical tool whose vertex is disposed in a region akin to the coupling region 15 of Yuji during a grinding step. Because none of the references show or describe all of the claimed features, the references fail to teach or suggest the claimed invention as a whole.



"Modified" Fig. 2 of Yuji

At most, the proposed combination could suggest to one of ordinary skill in the art to implement a conical tool with its vertex disposed outside of the coupling surface 15 and would not teach or suggest all of the claimed features. [10] That is, even assuming *arguendo*, that various elements could be arbitrarily selected from the relied-upon prior art—for example, operating a known conical tool (shown as dashed line forming a vertex in orifice surface 14 of a "modified" Figure 2 of Yuji) by the grinding machine of Gabrielli on the conical surface 13 of Yuji—the proposed combination of references still fails to show or describe a method of grinding a sealing surface of a valve seat with a conical tool having its vertex disposed in a transition portion. Therefore, a *prima facie* case of obviousness has not been established as set forth in MPEP § 2143 (p. 2100-125, 8th Ed., February 2003 Revision). Accordingly, claim 7 is patentable for at least this reason.

For the reasons discussed above, appellants respectfully assert that Yuji, the Admitted-Prior-Art, or Gabrielli, whether considered alone or in combination, fails to teach or suggest the claimed invention as a whole, as recited in claims 2-4 and 6-10. Accordingly, claims 2-4 and 6-10 are patentable over the relied-upon prior art.

[10] As noted at MPEP § 2143.03 (8th Ed., Rev. 1, Feb. 2003), **all** of the claimed features must be taught or suggested in the relied-upon prior art. Where all of the claimed features are not taught or suggested by relied-

9. CONCLUSION

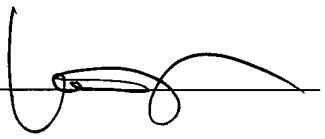
Appellants respectfully submit that Yuji, the Admitted-Prior-Art, and Gabrielli, whether considered individually or in combination, fails to teach or suggest the combination of features recited in independent claim 7. Moreover, appellants respectfully submit that claims 2-4, 6, and 8-10, which depend either directly or indirectly from independent claim 7, are also patentable inasmuch as they recite the same combinations of allowable features, as well as reciting additional features that further distinguish over the applied prior art.

In view of the foregoing, appellants respectfully request that the Board of Patent Appeals and Interferences reverse the Final Office Action and allow claims 2-4 and 6-10.

If there are any other fees due in connection with the filing of this Appeal Brief, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account No. 50-0310.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

Dated: 12 July 2004 By: 

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upon prior art, then a *prima facie* case of obviousness has not been established. *In re Royka*, 490 F2d 981, 180 USPQ 580 (CCPA 1974).

APPENDIX

CLAIMS UNDER APPEAL

2. The method according to claim 7, wherein the sealing portion comprises a first conical section defining a first included angle, and the transition portion comprises a second conical section defining a second included angle, and wherein the first included angle is greater than the second included angle.

3. The method according to claim 2, wherein the first included angle is substantially equal to 105, and the second included angle is substantially equal to 90 .

4. The method according to claim 3, wherein a ratio of the first transverse cross-sectional area over the first area is less than 0.5.

6. The method according to claim 7, wherein the grinding tool is driven in rotation about an axis of rotation.

7. A method of forming a fuel injector seat, the seat having an upstream face, a downstream face, and a passage extending along an axis between the upstream face and the downstream face, the method comprising:

forming within the passage an orifice portion proximate the downstream face and having a first transverse cross-sectional area relative to the axis;

forming within the passage a sealing portion proximate the upstream face and having a second transverse cross-sectional area relative to the axis that decreases at a first rate in a downstream direction from a first area to a second area;

determining a ratio of the first transverse cross-sectional area over the first area; and

forming within the passage a transition portion when the ratio of the first transverse cross-sectional area over the first area exceeds a predetermined value, the transition portion being interposed between the orifice portion and the sealing portion and having a third transverse cross-sectional area relative to the axis that decreases at a second rate in the downstream direction from the second area to the first transverse cross-sectional area, wherein the forming of the sealing portion includes grinding with a tool that has a conical end with a vertex of the conical end disposed in the transition portion to provide a select finish on the sealing portion, the transition portion provides a volume receiving the vertex of the tool so that the vertex avoids contact with the sealing surface and with the transition portion, the vertex being contiguous to the axis.

8. The method according to claim 7, wherein the select finish is less than 0.5 micrometers.

9. The method according to claim 8, wherein the select finish is approximately 0.4 micrometers.

10. The method according to claim 8, wherein the select finish is approximately 0.2 micrometers.

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